LISTING OF CLAIMS

1 (original) A method of identifying individuals predisposed to major depressive disorder comprising:

a) providing a nucleic acid from a human subject; wherein said nucleic acid comprises an adenylyl cyclase type 7 allele;

b) detecting the presence of at least one polymorphism within said adenylyl cyclase type 7 allele; and

c) correlating the presence of said at least one polymorphism with a predisposition to major depressive disorder.

2 (original) The method of Claim 1, wherein said at least one polymorphism is a repeat polymorphism.

3 (original) The method of Claim 2, wherein said repeat polymorphism is an $[AACA]_7$ repeat in the 3' untranslated region of said adenylyl cyclase type 7 allele.

4 (original) The method of Claim 1, wherein said subject is Caucasian.

5 (original) The method of Claim 1, wherein said subject is female.

6 (original) The method of Claim 1, wherein said subject is alcohol-dependent.

7 (original) The method of Claim 1, wherein said detecting step is accomplished using at least one technique selected from the group consisting of polymerase chain reaction, heteroduplex analysis, single stand conformational polymorphism analysis, ligase chain reaction, comparative genome hybridization, Southern blotting and sequencing.

8 (original) The method of Claim 1, wherein said nucleic acid from said subject is derived from a sample selected from the group consisting of buccal cells, biopsy material and blood.

9 (original) The method of Claim 1, further comprising step d) providing a diagnosis to said subject based on the presence or absence of said polymorphism.

10 (original) The method of Claim 9, wherein said diagnosis differentiates major depressive disorder from other forms of mental illness.

11 (original) The method of Claim 10, wherein said other forms of mental illness comprise bipolar disorder.

12 (original) The method of Claim 10, further comprising step e) recommending an antidepressant drug to said subject.

13 (withdrawn) A kit for determining if a subject is predisposed to major depressive disorder, comprising:

a) at least one reagent capable of specifically detecting at least one polymorphism in an adenylyl cyclase type 7 allele; and
b) instructions for determining whether a subject is predisposed to major depressive disorder.

14 (withdrawn) The kit of Claim 13, wherein said at least one polymorphism is a repeat polymorphism.

15 (withdrawn) The kit of Claim 13, wherein said at least one reagent comprises a nucleic acid probe that hybridizes under stringent conditions to a nucleic acid sequence selected from the group consisting of the coding strand of the adenylyl cyclase type 7 gene, and the noncoding strand of the adenylyl cyclase type 7 gene.

16 (withdrawn) The kit of Claim 13, wherein said at least one reagent comprises a sense primer and an antisense primer flanking said at least one polymorphism in said adenylyl cyclase type 7 allele.

17 (withdrawn) The kit of Claim 16, wherein at least one of said primers comprises a fluorescent tag.

18 (withdrawn) The kit of Claim 13, wherein said instructions comprise instructions required by the United States Food and Drug Administration for use in *in vitro* diagnostic products.

19 (withdrawn) The kit of Claim 13, further comprising at least one reagent capable of specifically detecting at least one polymorphism in an additional allele associated with major depressive disorder.

20 (withdrawn) A method of screening compounds, comprising:

a) providing:

i) at least one cell comprising an adenylyl cyclase type 7 allele with a tetranucleotide repeat polymorphism, and

ii) one or more test compounds; and

b) contacting said at least one cell with said test compound; and

c) detecting a change in adenylyl cyclase type 7 in said at least one cell in the presence of said test compound relative to the absence of said test compound.

21 (withdrawn) The method of Claim 20, wherein said detecting comprises detecting a change in adenylyl cyclase type 7 mRNA.

22 (withdrawn) The method of Claim 20, wherein said detecting comprises detecting a change in a change in adenylyl cyclase type 7 polypeptide.

23 (withdrawn) The method of Claim 20, wherein said detecting comprises detecting a change in adenylyl cyclase type 7 enzymatic activity.

24 (withdrawn) The method of Claim 20, wherein said cell is a platelet.

25 (withdrawn) The method of Claim 20, wherein said test compound comprises a drug.

26 (original) A method of identifying individuals predisposed to major depressive disorder, comprising:

a) providing a nucleic acid sample from a subject, said sample containing an adenylyl cyclase type 7 allele;

b) correlating the identity of said adenylyl cyclase type 7 allele with a predisposition to major depressive disorder.

27 (original) The method of Claim 26, wherein said identity of said adenylyl cyclase type 7 allele is accomplished using at least one technique selected from the group consisting of polymerase chain reaction, heteroduplex analysis, single stand conformational polymorphism analysis, ligase chain reaction, comparative genome hybridisation, Southern blotting and sequencing.

28 (original) The method of Claim 26, wherein said nucleic acid sample from said subject is selected from the group consisting of buccal cells, biopsy material and blood.

29 (original) The method of Claim 26, further comprising step c) providing a diagnosis to said subject based on the identity of said adenylyl cyclase type 7 allele.

30 (original) The method of Claim 29, wherein said diagnosis differentiates major depressive disorder from other forms of mental illness.

31 (original) The method of Claim 30, wherein said other forms of mental illness comprise bipolar disorder.

32 (original) The method of Claim 30, further comprising step d) recommending an antidepressant drug to said subject.